

## Remarks/Arguments

Claims 1-11 were pending in the application. With this amendment, claims 1, 2, 5 and 9 have been amended, claims 3, 4, 6, 7, 10 and 11 have been canceled and new claims 12 and 13 have been added. Claims 1, 2, 5, 8, 9, 12 and 13 are therefore pending in the application.

Claims 1 and 5 have been amended to include the subject matter of claims 3 and 4, as well as the features that the cellulose ether has a net charge of from -0.7 to -0.04 and that the cellulose ether is water soluble. Support for these features can be found, for example, in the published PCT application at page 5, lines 11 and 12 for the lower limit of net charge and for the upper limit of net charge as calculated from the values identified in now canceled claims 3 and 4. According to the PCT published application, based on the disclosure of page 5, lines 13-15, the net charge is the subtraction of the average DS of carboxymethyl groups, i.e. 0.05, from the average DS of quaternary ammonium groups, i.e. 0.01, giving an upper limit for net charge of -0.04. No new matter is introduced with this amendment in view of M.P.E.P. § 2163.05(III) and *In re Wertheim*, 541 F.2d 257, 191 USPQ90 (CCPA 1976). Support for the feature that the cellulose ether is soluble in water can be found, for example, in the published PCT application at page 5, line 5 and page 3, lines 14-23. Support for new claim 12 can be found as noted above, as well as, for example, at page 1, lines 7-11. Support for new claim 13 can be found in claims 2 and 9. No new matter has been added.

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,675,394 ("Solarek"). Claims 1, 3 and 4 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,294,299 ("Zeuner") as evidenced by U.S. Patent Application Publication No. 2004/0131854 ("Aho"). Claims 1, 3 and 4 stand rejected under 35 U.S.C. § 103(a) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,602,994 ("Cash"). Claims 5-8 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cash. Claims 2 and 9-11 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Cash in view of U.S. Patent No. 4,988,806 ("Gruning") or U.S. Patent No. 4,940,785 ("Stober"). Claims 1-4, 6 and 7

stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as unpatentable over claims 1-6, 8 and 15 of copending Application No. 11/149613 in view of Stober. Claims 1-4, 6 and 7 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as unpatentable over claims 1-6, 8, 18 and 20 of copending Application No. 11/018,915 in view of Stober and Zeuner. Applicants respectfully submit that the pending claims, as amended, are patentable over these cited references for at least the reasons set forth below.

**Response to Rejection of Claims 1 and 2 Under 35 U.S.C. § 102(b) Based on Solarek**

Claim 1 has been amended to include the features of claim 3 and 4. Accordingly, the rejection of claim 1 as anticipated by Solarek is moot.

**Response to Rejection of Claims 1, 3 and 4 Under 35 U.S.C. § 102(b) Based on Zeuner as evidenced by Aho**

Claim 1 stands rejected as anticipated by Zeuner as evidenced by Aho. More specifically, the Office asserts that Zeuner discloses a paper comprising a filler and a cationic polymeric flocculating agent having a degree of substitution (DS) of 0.01 to 0.3, which the Office construes to be cationic substitution. (Office Action, page 3). The Office further asserts that Zeuner discloses carboxymethylcellulose cationized with quaternary ammonium compounds, and that the DS of carboxymethylcellulose typically varies from 0.1 to 1.2. Based on the disclosure of Zuener, the Office rejects claims 1, 3 and 4.

According to M.P.E.P § 2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). As amended, independent claim 1 includes the features of claims 3 and 4, as well as the feature that the claimed cellulose ether has a net charge in the range of from -0.7 to -0.04. Accordingly, the net

charge of the cellulose ether is anionic. Applicants submit that Zeuner does not appear to disclose or suggest this feature.

According to Zeuner, its alleged invention is described as including an anionic flocculating active pigment and an organic flocculating agent which is a cationic polymeric carbohydrate. (See e.g., Zeuner, at col. 2, lines 27 and 30-31). Further, as seen throughout Zeuner, the reference lists a number of polymeric carbohydrates that are cationic polymeric carbohydrates. Most significantly, as cited in the Office Action, where carboxymethyl cellulose is specifically disclosed as a preferred polymeric carbohydrate, i.e. at col. 4, lines 42-43, the carboxymethyl cellulose is described as being cationic. In fact, all of the preferred carbohydrates are described as being cationic and/or cationized. Thus, the carbohydrates of Zeuner have a net ionic charge that is cationic.

Contrary to Zeuner, Applicants' invention, as recited in claim 1, has a net ionic charge that is anionic. Claim 1 thus fails to teach or suggest all of the features of claim 1 and claim 1 therefore cannot be anticipated by Zeuner. Accordingly, claim 1 is patentable over Zeuner.

### **Response to Rejection of Claims 1, 3 and 4 Under 35 U.S.C. § 102(b) Based on Cash**

Claims 1, 3 and 4 stand rejected as anticipated by or, in the alternative, as obvious over Cash. Further, claims 5-8 stand rejected as obvious over Cash. Specifically, the Office asserts that Cash discloses "a paper composition comprising derivatized microfibrillar cellulose ether, and particularly CMC" as well as cationic groups such as quaternary amine groups and that the paper can comprise fillers. (Office Action, page 4).

With respect to claims 3 and 4 in particular, the Office alleges that the DS of groups that provide electrostatic functionality is between 0.02 and 0.5, while the DS for anionic constituents is at least 0.05. (Office Action, page 4). The Office acknowledges that the cationic DS is not explicitly stated, but nevertheless asserts that the disclosed

ranges implicitly embody a DS for cationic constituents within the claimed range, or at least, obtaining the claimed DS for cationic substituents would have been obvious to one of ordinary skill in the art. (Office Action, page 4). Regarding claims 5-8, the Office acknowledges that Cash fails to disclose a paper coating. Regardless of this deficiency, the Office asserts that a paper coating comprising derivatized microfibrillar cellulose ether would have been obvious to one of ordinary skill in the art. (Office Action, page 4).

As noted above, claims 1 and 5, as amended, recite that the claimed cellulose ether has a DS of quaternary ammonium groups of between 0.01 and 0.7, a DS of carboxymethyl groups of between 0.05 and 1.0, a net charge in the range of from -0.7 to -0.04 and that the cellulose ether is soluble in water. Applicants submit that Cash is silent with respect to the net charge of its polysaccharide in addition to being silent (as the Office acknowledges) regarding cationic DS. Applicants submit that Cash also teaches that its microfibrillar polysaccharide is insoluble in water. Specifically, Cash, at col. 9, lines 3-24, Cash discloses that "[t]he degree of substitution . . . of the polysaccharide should be sufficiently low so that the derivatized microfibrillar polysaccharide will be substantially insoluble in the solvent or carrier that is present in the intended environment of use." (emphasis added). Among the solvents listed, water is indicated as a solvent or carrier. (Cash at col. 9, line 9). Thus, as discussed in Cash, "the derivatized microfibrillar polysaccharide is substantially insoluble in water." (Cash at col. 9, lines 11-12). Accordingly, Cash teaches away from Applicant's invention that includes a cellulose ether that is soluble in water. As set forth in the M.P.E.P. "[a] prior art reference that 'teaches away' from the claimed invention is a significant factor to be considered in determining obviousness . . . ." See M.P.E.P. § 2145(X)(D)(1) (quoting *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)). Because Cash teaches away from Applicants' invention, the Office has failed to establish a *prima facie* case of obviousness and the rejection must be withdrawn.

Accordingly, Applicants submit that claims 1 and 5 are patentable over Cash. Claims 2, 8 and 9 are also patentable over Cash for at least the reasons that claims 5

and 8, from which they are respectively dependent, are patentable, but may be separately patentable for additional reasons as well.

### **Response to Rejection of Claims 2 and 9-11 Under 35 U.S.C. § 103(a) Based on Cash In View Of Gruning or Stober**

As noted above, claims 2 and 9 depend from claims 1 and 5 respectively. Accordingly, claims 2 and 9 are patentable for at least the reasons that claims 1 and 5 are patentable. Furthermore, Applicants submit that claims 2 and 9 are also patentable over the combination of Cash in view of Gruning or Stober for the following additional reasons.

As noted previously, Cash teaches that its microfibrillar polysaccharide is substantially insoluble in water. In contrast, Gruning relates to “nitrogen-containing products, based on cellulose, which show improved solubility behavior in water . . . .” (Gruning at col. 2, lines 55-57). Further, Gruning teaches “[t]he expression, improved solubility behavior in water, is to be understood to mean that, when the products are dissolved in water, gel-like intermediate states are avoided or at least largely excluded.” (Gruning at col. 2, lines 59-63). Accordingly, Cash and Gruning teach away from one another, or at least, Applicants submit, the proposed combination of Cash with Gruning would render either Cash’s or Gruning’s alleged inventions unfit for their intended purposes. It is well settled that “[i]t is improper to combine references where the references teach away from their combination. See M.P.E.P. § 2145(X)(D)(2) (citing *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)). Moreover, “[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” See M.P.E.P. § 2143.01(V) (citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)). Accordingly, the combination of Cash and Gruning fails to establish a *prima facie* case of obviousness.

Regarding the combination of Cash and Stober, Applicants submit that Stober teaches away from Applicants’ invention. More specifically, Stober is directed to a method for preparing cellulose ethers containing tertiary and quaternary nitrogen.

Where Stober discloses preparing carboxymethyl cellulose in the Examples, Stober discloses, at col. 8, line 16, the cationization of na-carboxymethyl cellulose, with DS shown in Table 10 of 0.046 and 0.042. Applicants' invention, however, as recited in independent claims 1 and 5 has a net charge in the range of from -0.7 to -0.04, i.e. it is anionic. Thus, where Cash is silent with respect to this feature, Stober not only fails to make up for this deficiency, but instead teaches away from Applicants' invention as recited in claims 1 and 5, and therefore dependent claims 2 and 9, as well.

### **Response to Double Patenting Rejections**

Claims 1-4, 6 and 7 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as unpatentable over claims 1-6, 8 and 15 of copending Application No. 11/149,613 in view of Stober. Applicants submit that the currently pending claims include features which are not recited in the claims of copending Application No. 11/149,613 in view of Stober. Specifically, independent claim 1 recites at least the feature that the cellulose ether has a net charge in the range of from -0.7 to -0.04. This feature is neither disclosed nor suggested in claims 1-6, 8 and 15 of copending Application No. 11/149,613 in view of Stober. Further, Stober teaches away from Applicants' invention, as discussed above. Accordingly, Applicants request reconsideration and withdrawal of the provisional double patenting rejection.

In addition, claims 1-4, 6 and 7 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as unpatentable over claims 1-6, 8, 18 and 20 of copending Application No. 11/018,915 in view of Stober and Zeuner. Here again, independent claim 1 recites at least the feature that the cellulose ether has a net charge in the range of from -0.7 to -0.04. This feature is neither disclosed nor suggested in claims 1-6, 8, 18 and 20 of copending Application No. 11/018,915 in view of Stober and Zeuner. Further, Applicants submit that Stober and Zeuner each teach away from Applicants' invention, as discussed above, as each teaches a net charge that is cationic. Accordingly, Applicants request reconsideration and withdrawal of the provisional double patenting rejections.

## New Claim 12

New independent claim 12 is directed to a method of making paper. The method comprises the steps of adding a cellulose ether to an aqueous paper stock, adding a filler to the stock, removing water from the stock and drying the stock. Further, the cellulose ether has a DS of quaternary ammonium groups of between 0.01 and 0.7, a DS of carboxymethyl groups of between 0.05 and 1.0, and a net charge in the range of from -0.7 to -0.04, with the proviso that the cellulose ether is not a hydroxyethyl cellulose and wherein the cellulose ether is soluble in water. Applicants submit that claim 12 is patentable over the cited references for at least the reasons as set forth above with respect to independent claims 1 and 5, but may be separately patentable for additional reasons as well.

## Conclusion

In view of the amendments and arguments set forth above, Applicants respectfully submit that the pending application is in condition for allowance. Notice to this effect is earnestly solicited.

Respectfully submitted,



James C. Abruzzo  
Attorney for Applicants  
Registration No.: 55,890

Akzo Nobel Inc.  
Legal & IP  
120 White Plains Road, Suite 300  
Tarrytown, NY 10591  
(914) 333-7448